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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,363	02/28/2002	Shinichi Terashita	3693-26	9199
23117	7590	03/09/2004	EXAMINER	
NIXON & VANDERHYE, PC 1100 N GLEBE ROAD 8TH FLOOR ARLINGTON, VA 22201-4714			WANG, GEORGE Y	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 03/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/084,363

Applicant(s) 

TERASHITA ET AL.

Examiner

George Y. Wang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                            | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (U.S. Patent No. 5,579,141, from hereinafter "Suzuki") in view of Sasaki et al. (U.S. Patent No. 6,288,762, from hereinafter "Sasaki").

3. As to claims 1 and 15-16, Suzuki discloses a liquid crystal display (LCD) device and method having a first substrate (fig. 5, ref. 1), a second substrate (fig. 5, ref. 11), a

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vertical alignment type liquid crystal layer (fig. 1a, ref. 4) provided between the first and second substrates, a voltage application means (col. 13, lines 1-30) for applying voltage across the liquid crystal layer, a plurality of picture elements (fig. 5) each including the liquid crystal layer whose orientation changes according to the voltage applied by the voltage application means, where the liquid crystal layer in each of the plurality of picture elements includes a 4-divided domain (fig. 5, ref. a, b, c, d).

Although the reference discloses various substrate regions, the reference fails to specifically disclose the first substrate having two first regions having an orientation-regulating force in a first direction and a second region between the two first regions with a direction opposite the first, while the second substrate has a third region that crosses the first direction and a fourth region that has a direction opposite that of the third. Furthermore, the reference fails to specifically teach the first sub-domain formed between the two first regions and the third region, the second sub-domain between the second and third regions, the third sub-domain between the second and the fourth regions, and the fourth sub-domain between the other one of the two first regions and the fourth region.

Sasaki discloses an LCD (abstract) in a vertically aligned mode having the first substrate having two first regions (fig. 9a, ref. 13a<sub>1</sub>, 13a<sub>3</sub>) having an orientation-regulating force in a first direction and a second region (fig. 9a, ref. 13a<sub>2</sub>) between the two first regions with a direction opposite the first, while the second substrate has a third region (fig. 9a, ref. 13b<sub>2</sub>) that crosses the first direction and a fourth region (fig. 9a, ref. 13b<sub>3</sub>) that has a direction opposite that of the third. Sasaki also teach the first sub-

domain formed between the two first regions and the third region, the second sub-domain between the second and third regions, the third sub-domain between the second and the fourth regions, and the fourth sub-domain between the other one of the two first regions and the fourth region (fig. 9-10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the first substrate with two first regions having an orientation-regulating force in a first direction and a second region between the two first regions with a direction opposite the first, while the second substrate has a third region that crosses the first direction and a fourth region that has a direction opposite that of the third, and the first sub-domain formed between the two first regions and the third region, the second sub-domain between the second and third regions, the third sub-domain between the second and the fourth regions, and the fourth sub-domain between the other one of the two first regions and the fourth region since one would be motivated to provide a vertically aligned mode LCD device having a divided alignment domain structure realized stably in a liquid crystal layer (col. 3, lines 19-22). This not only eliminates problems associated with stability (col. 3, lines 12-15), it also provides a VA-mode LCD device having an improved view angle characteristics (col. 3, lines 16-18).

4. As per claims 2 and 17, Suzuki discloses an LCD device as recited above having a first direction that is perpendicular to the third direction (col. 8, line 61 – col. 9, line 2).

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5. Regarding claims 3-6 and 18-20, Suzuki discloses an LCD device as recited above where the picture element (fig. 5) includes the presence of applied voltage (col. 13, lines 1-30) and a 4-divided domain (fig. 5, ref. a, b, c, d). Furthermore, the reference teaches that the total area of the sub-domains are equal to one another (col. 6, lines 44-51).

However, the reference fails to specifically disclose an additional first sub-domain that is adjacent to the fourth sub-domain.

Sasaki discloses an LCD device with an additional first sub-domain that is adjacent to the fourth sub-domain (fig. 9a, ref. 13a<sub>3</sub>).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have an additional first sub-domain that is adjacent to the fourth sub-domain since one would be motivated to provide a vertically aligned mode LCD device having a divided alignment domain structure realized stably in a liquid crystal layer (col. 3, lines 19-22). This not only eliminates problems associated with stability (col. 3, lines 12-15), it also provides a VA-mode LCD device having an improved view angle characteristics (col. 3, lines 16-18).

6. Regarding claims 7-12, Suzuki discloses an LCD device as recited above where the length of the second sub-domain is directly related to the length of each of the second region and fourth region and where the plurality of picture elements is arranged in a matrix of rows and columns such that the regions are formed in parallel to the rows in a stripe pattern (fig. 14-17).

7. As to claims 13-14, Suzuki discloses an LCD device as recited above, however, the reference fails to specifically disclose a display produced normally in black mode and further having a pair of opposing polarizers.

Sasaki discloses an LCD device with a display produced normally in black mode (col. 1, lines 45-63) and further having a pair of opposing polarizers (col. 1, lines 34-41).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a black mode display and a pair of polarizers since one would be motivated to provide precise vertical alignment of the liquid crystal molecules (col. 1, lines 45-63), thereby improving contrast ratio and viewing angle (col. 3, lines 12-22).

8. Claims 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki and Sasaki in view of Yoshida et al. (U.S. Patent No. 5,377,028, from hereinafter "Yoshida").

Suzuki and Sasaki disclose an LCD device as recited above, however, the references fail to specifically teach that the first and third sub-domains comprise liquid crystal molecules twisting in the clockwise twist direction in the presence of an applied voltage, and the second and fourth sub-domains comprise liquid crystal molecules twisting in the counter clockwise twist direction in the presence of the applied voltage.

Yoshida discloses a vertically-aligned LCD device where the first and third sub-domains comprise liquid crystal molecules twisting in the clockwise twist direction in the

presence of an applied voltage, and the second and fourth sub-domains comprise liquid crystal molecules twisting in the counter clockwise twist direction in the presence of the applied voltage (fig. 2; col. 6, lines 26-46).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have an LCD device where the first and third sub-domains comprise liquid crystal molecules twisting in the clockwise twist direction in the presence of an applied voltage, and the second and fourth sub-domains comprise liquid crystal molecules twisting in the counter clockwise twist direction in the presence of the applied voltage since one would be motivated to increase contrast and sharpness while realizing an LCD which stably operates for a long time (col. 2, lines 15-22).

### ***Response to Arguments***

9. Applicant's arguments filed November 18, 2003 have been fully considered but they are not persuasive.

Applicant has two main arguments. The first argument alleges that the Sasaki reference does not disclose an LCD with a third region having an orientation –regulating force for orienting the liquid crystal molecules into a third direction that crosses the first direction. The second argument alleges that one would not combine the teachings of the Suzuki and Sasaki reference.

In response to Applicant's first argument, Examiner notes that it is clear that the Sasaki reference teaches an LCD (abstract) in a vertically aligned mode having the first substrate having two first regions (fig. 9a, ref. 13a<sub>1</sub>, 13a<sub>3</sub>) having an orientation-



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regulating force in a first direction and a second region (fig. 9a, ref. 13a<sub>2</sub>) between the two first regions with a direction opposite the first, while the second substrate has a third region (fig. 9a, ref. 13b<sub>2</sub>) that crosses the first direction and a fourth region (fig. 9a, ref. 13b<sub>3</sub>) that has a direction opposite that of the third. Furthermore, it is noted that the details of this crossing feature upon which applicant relies is not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). As such, Examiner finds that this teaching is supported in the Sasaki reference.

As to Applicant's second argument, Examiner asserts that Applicant's argument is unfounded and weak at best. For instance, Applicant's only offer of support is that the technologies are entirely different with respect to alignment and with respect to domain generation. Examiner interprets this line of reasoning to mean that it is not combinable because it is not combinable. Without further support, it is difficult to agree with Applicant's argument. Furthermore, Applicant argues that there is "no suggestion" in the art of record for such a combination. However, Examiner notes that the reason for combination, as mentioned above, is to provide a vertically aligned mode LCD device having a divided alignment domain structure realized stably in a liquid crystal layer (col. 3, lines 19-22). This not only eliminates problems associated with stability (col. 3, lines 12-15), it also provides a VA-mode LCD device having an improved view angle characteristics (col. 3, lines 16-18).

***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Y. Wang whose telephone number is 571-272-2304. The examiner can normally be reached on M-F, 8 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

gw  
February 12, 2004

  
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